Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1 – 14 (cancelled)

Claim 15 (previously presented): A catalytic composition for the partial oxidation of light hydrocarbon mixtures which comprises:

i) a perovskite crystallographic structure; and

ii) a nickel metal.

Claim 16 (previously presented): The composition according to Claim 15, wherein said composition further comprises:

iii) a rhodium metal.

Claim 17 (previously presented): A catalytic composition for the partial oxidation of light hydrocarbon mixtures which comprises:

i) a perovskite crystallographic structure; and

ii) a rhodium metal.

Claim 18 (currently amended): The composition according to Claim 15, wherein said perovskite ~~compound~~ crystallographic structure further comprises formula (I):

$$[A_zA'_{1-z}][B_{1-x-y}Ni_x\ Rh_y]O_{3-\delta}$$

wherein said A and said A' each comprise at least one component selected from the group consisting of the lathanide family, the actinide family, and group [[II$_a$]] IIa,

wherein said B is at least one component selected from the transition metal groups of columns Ib, IIb, IIIb, IVb, Vb, VIb, VIIb, and VIIIb,

wherein $0< x \leq 0.7$,

wherein $0 < y \leq 0.5$,

wherein $0 \leq x+y \leq 0.8$,

wherein $0 \leq z \leq 1$, and

wherein said δ is adjusted so as to obtain the electric neutrality of said perovskite compound.

Claim 19 (previously presented): The composition according to Claim 18, wherein said A and said A' each comprise at least one component selected from the group consisting of:

i) La;

ii) Ce;

iii) Ca; and

iv) Sr.

Claim 20 (previously presented): The composition according to Claim 19, wherein said A is La.

Claim 21 (previously presented): The composition according to Claim 18, wherein said B is at least one component selected from the group consisting of:

i) Mn;

ii) Fe;

iii) Co; and

iv) Al.

Claim 22 (currently amended): The composition according to Claim 18, wherein said perovskite ~~compound~~ crystallographic structure further comprises formula (Ia):

$$[La_zA'_{1-z}][Fe_{1-x-y}Ni_x\ Rh_y]O_{3-\delta}.$$

Claim 23 (currently amended): The composition according to Claim 18, wherein said perovskite ~~compound~~ crystallographic structure further comprises formula (Ib):

$$[La_zCe_{1-z}][Fe_{1-x-y}Ni_x\ Rh_y]O_{3-\delta}.$$

Claim 24 (previously presented): The composition according to Claim 18, wherein $0< x \leq 0.5$.

Claim 25 (previously presented): The composition according to Claim 18, wherein $0< y \leq 0.25$.

Claim 26 (previously presented): The composition according to Claim 18, wherein $z < 1$.

Claim 27 (previously presented): The composition according to Claim 22, wherein said formula (Ia) comprises about $La\ Fe_{0.7}\ Ni_{0.25}\ Rh_{0.05}\ O_{3-\delta}$.

Claim 28 (previously presented): The composition according to Claim 23, wherein said formula (Ib) comprises about $La_{0.8}\ Ce_{0.2}\ Fe_{0.7}\ Ni_{0.25}\ Rh_{0.05}\ O_{3-\delta}$.

Claim 29 (previously presented): The composition according to Claim 28, wherein said formula (Ib) comprises about $La_{0.8}\ Ce_{0.2}\ Fe_{0.7}\ Ni_{0.3}\ O_{3-\delta}$.

Claim 30 (currently amended): The composition according to Claim 15, wherein ~~the~~ said partial oxidation of light hydrocarbon mixtures occurs when an operating temperature of the catalyst is in the range of about 500 to about 1300 °C.

Claim 31 (currently amended): The composition according to Claim 30, wherein said operating temperature of the catalyst is in the range of about 600 to about 1100 °C.

Claim 32 (currently amended): The composition according to Claim 15, wherein ~~the~~ said partial oxidation of light hydrocarbon mixtures occurs when an operating pressure of the catalyst is in the range of about 10^5 Pa to about 3 x10^6 Pa.

Claim 33 (currently amended): The composition according to Claim 32, wherein said operating pressure of the catalyst is in the range of about 10^5 Pa to about 10^6 Pa.

Claim 34 (currently amended): The composition according to Claim 15, wherein said partial oxidation ~~process~~ further comprises at least one oxidant gaseous feed selected from the group consisting of:

i) oxygen;
ii) oxygen and an inert gas mixture; and
iii) steam and carbon dioxide.

Claim 35 (previously presented): The composition according to Claim 15, wherein said light hydrocarbon mixture to be partially oxidized further comprises natural gas.

Claim 36 (previously presented): A method for making a catalytic composition for the partial oxidation of light hydrocarbon mixtures which comprises the steps of:

i) introducing a perovskite crystallographic structure; and

ii) adding a nickel metal.

Claim 37 (previously presented): The method according to Claim 36, wherein said method further comprises:

iii) adding a rhodium metal.

Claim 38 (previously presented): A method for making a catalytic composition for the partial oxidation of light hydrocarbon mixtures which comprises the steps of:

i) introducing a perovskite crystallographic structure; and

ii) adding a rhodium metal.

Claim 39 (currently amended): The method according to Claim 36, wherein said perovskite ~~compound~~ crystallographic structure further comprises formula (I):

$$[A_zA'_{1-z}][B_{1-x-y}Ni_x\ Rh_y]O_{3-\delta}$$

wherein said A and said A' each comprise at least one component selected from the group consisting of the lathanide family, the actinide family, and group [[II_a]] IIa,

wherein said B is at least one component selected from the transition metal groups ~~of columns~~ Ib, IIb, IIIb, IVb, Vb, VIb, VIIb, and VIIIb,

wherein $0< x \leq 0.7$,

wherein $0< y \leq 0.5$,

wherein $0 \leq x+y \leq 0.8$,

wherein $0 \leq z \leq 1$, and

wherein said δ is adjusted so as to obtain the electric neutrality of said perovskite compound.

Claim 40 (previously presented): The method according to Claim 39, wherein said A and said A' each comprise at least one component selected from the group consisting of:

i) La;
ii) Ce;
iii) Ca; and
iv) Sr.

Claim 41 (previously presented): The method according to Claim 40, wherein said A is La.

Claim 42 (previously presented): The method according to Claim 39, wherein said B is at least one component selected from the group consisting of:

i) Mn;
ii) Fe;
iii) Co; and
iv) Al.

Claim 43 (currently amended): The method according to Claim 39, wherein said perovskite ~~compound~~ crystallographic structure further comprises formula (Ia):

$$[La_zA'_{1-z}][Fe_{1-x-y}Ni_x\ Rh_y]O_{3-\delta}.$$

Claim 44 (currently amended): The method according to Claim 39, wherein said perovskite ~~compound~~ crystallographic structure further comprises formula (Ib):

$$[La_zCe_{1-z}][Fe_{1-x-y}Ni_x\ Rh_y]O_{3-\delta}.$$

Claim 45 (previously presented): The method according to Claim 39, wherein $0<x \leq 0.5$.

Claim 46 (previously presented): The method according to Claim 39, wherein $0 < y \leq 0.25$.

Claim 47 (previously presented): The method according to Claim 39, wherein $z < 1$.

Claim 48 (currently amended): The method according to Claim 43, ~~wherein said method comprises~~ further comrpising about $La\ Fe_{0.7}\ Ni_{0.25}\ Rh_{0.05}\ O_{3-\delta}$.

Claim 49 (currently amended): The method according to Claim 44, ~~wherein said method comprises~~ further comrpising about $La_{0.8}\ Ce_{0.2}\ Fe_{0.7}\ Ni_{0.25}\ Rh_{0.05}\ O_{3-\delta}$.

Claim 50 (currently amended): The method according to Claim 49, ~~wherein said method comprises~~ further comrpising about $La_{0.8}\ Ce_{0.2}\ Fe_{0.7}\ Ni_{0.3}\ O_{3-\delta}$.

Claim 51 (previously presented): The method according to Claim 36, wherein the operating catalyst condition is in the range of about 500 to about 1300°C.

Claim 52 (previously presented): The method according to Claim 51, wherein said catalyst condition is in the range of about 600 to about 1100° C.

Claim 53 (previously presented): The method according to Claim 36, wherein the operating catalyst condition is in the range of about 10^5 Pa to about 3×10^6 Pa.

Claim 54 (previously presented): The method according to Claim 53, wherein said catalyst condition is in the range of about 10^5 Pa to about 10^6 Pa.

Claim 55 (previously presented): The method according to Claim 36, wherein the partial oxidation requires adding an oxidant gaseous feed that comprises at least one component selected from the group consisting of:

i) oxygen;

ii) oxygen and an inert gas mixture; and

iii) steam and carbon dioxide.

Claim 56 (previously presented): The method according to Claim 36, wherein said light hydrocarbon mixture comprises natural gas subjected to at least one process selected from the group consisting of:

i) partial oxidation;

ii) reforming (steam or dry);

iii) selective oxidation;

iv) hydrogenation reaction; and

v) dehydrogented oxidative reaction.